Indicators and Characteristics of Degenerated Grassland in China

Fengxia Li
Academy of Agriculture and Forestry Science, China

Ting Gao
Academy of Agriculture and Forestry Science, China

Jianning Zhu
Academy of Agriculture and Forestry Science, China

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Li Feng-xia , Gao Ting , Zhu Jian-ning E-mail : lifengxia1211@sina .com
Resource and Environment Institute of Ningxia , Academy of Agriculture and Forestry Science , Yinchuan 750002 , China ,

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There are more than 400 million hm^2 of grasslands in China , and more than 80% are in various degrees of degradation . Degredation of China s grassland ecosystem contributes to productivity constraints . Grassland degradation is the deterioration of structural characteristics , material recycling , energy flow and other characteristics of grassland ecosystems , that is , the biological communityand the physical environment required for their survival .

Grassland degradation diagnosis Ren Ji-zhou academician proposed a three threshold value" , that is , a health threshold value , a warning threshold value , and an unhealthy threshold value based on soil stability and nutritive value and energy flow distribution mechanism for restoring three indicators . He established a scale for evaluation of grassland health and function , and pointed out that it is the grassland degradation process which leads from the threshold value for healthy grasslands to the threshold value for collapsed systems . Finding the line between the two thresholds from the threshold for health to the unhealthy threshold , is the key for determining whether grassland degradation is occurring(Hu Tian-ming . 2001) .

Degraded grassland classification and evaluation indicators Grassland degradation is a process , that is , it occurs over a period of time from initial decline to extreme degradation of the grassland . The degree of degredation can be divided into four stages : mild , moderate , severe and extreme . Indicators of these stages include plant species composition , dominant plant cover , litter , plant biomass , wildlife species composition and condition , soil conditions , etc . . .These indicators and their status play an important role in theoretical study and practical applications(Shi Zhi-Cheng . 2001 ,Liu Wei , Qi-Ji Wang , et al . 1999) .

Degradation causes Over-grazing is the main reason for grassland degradation . Under natural conditions the unit area of grassland can only maintain a certain number of livestock . If frequent , unrestricted excessive grazing by livestock occurs , adequate regrowth will not occur . There is no time to accumulate organic matter , production decreases , and dwarf shrubs become more common . In addition , good forage , those species preferred by livestock , are most affected by overgrazing , while toxic species are favored Over the long-term xcessive livestock trampling increases soil compaction , resulting in lower permeability , increased flooding , and further deterioration of soil properties . In grasslands , many other human impacts also lead to degradation(Zhou Hua-kun . 2002 , Hu Tian-ming . 2001) .

Grassland degradation hazards Grassland degradation simplifies plant communities and soil properties deteriorate ,with the result that grassland structure and composition undergo great changes . Subustantially reduced productivity and potential stocking levels are not the only impacts of degredation , biodiversity loss is also a major concern . Studies show that with grassland degradation , species richness and evenness are greatly reduced (Li , Jiang . 2002) . And as degradation continues , soil physical , chemical and biological characteristics are adversely impacted . Nutrients and physical properties decline and plant growth is further restricted . Soil water-retention capacity is also decreased , thus affecting the environment , and leading to ecological decline and potential natural disasters(Li , Yong-hong , Chen Zhong . 1999) .

Reference

Hu Tian-ming . 2001 . Northwest of natural grassland protection measures and technologies . *Agricultural Research in Dry Areas* 19 :122-126 .